

title.

현충일 2-2

date.

Not

$$\#3-(a) \lim_{x \rightarrow 0} \left(1 + \frac{x}{3}\right)^{\frac{1}{x}} = \lim_{x \rightarrow 0} \left(1 + \frac{x}{3}\right)^{\frac{3}{x} \times 3}$$

$$= \lim_{h \rightarrow 0} \left(1 + h\right)^{\frac{1}{h}} \quad \left(\begin{array}{l} \uparrow \\ h = \frac{x}{3} \end{array}\right)$$

$$= e^3 \quad \#$$

$$\#3-(b) \lim_{x \rightarrow \infty} \left(1 + \frac{2}{x}\right)^{3x} = \lim_{x \rightarrow \infty} \left(1 + \frac{2}{x}\right)^{\frac{x}{2} \times 6}$$

$$= \lim_{t \rightarrow 0} \left(1 + \frac{1}{t}\right)^t \quad \left(\begin{array}{l} \uparrow \\ t = \frac{x}{2} \end{array}\right)$$

$$= e^6 \quad \#$$

$$\#3-(c) \lim_{x \rightarrow 0} \frac{\ln(1+3x)}{x} = \lim_{x \rightarrow 0} \ln(1+3x)^{\frac{1}{x}}$$

$$= \lim_{x \rightarrow 0} \ln(1+3x)^{\frac{1}{3x} \times 3}$$

$$= \lim_{t \rightarrow 0} \ln(1+t)^{\frac{1}{t}} \quad \left(\begin{array}{l} \uparrow \\ t = 3x \end{array}\right)$$

$$= \ln e^3$$

$$= 3 \quad \#$$